IN THE CLAIMS

The pending claims are as follows:

1. (Original) A process for the exothermic generation of syngas by the partial oxidation of a hydrocarbon-containing fuel comprising:

(i) reacting the hydrocarbon-containing fuel with an oxygen containing gas in a first reactor to produce the syngas and byproducts comprising CO_2, H_2O and soot; and

(ii) introducing the syngas and byproducts into a second reactor containing a non-carbonaceous material that traps the soot for a sufficient time such that the majority of the byproduct soot is gasified via reaction with the byproduct CO_2 and/or H_2O to produce a syngas stream that is depleted in the soot.

2. (Original) The process of Claim 1 which further comprises:

(iii) recovering a portion of the heat from the soot depleted syngas stream and using at least a portion of the recovered heat to facilitate the additional production of syngas via the (endothermic) catalytic reforming of natural gas and steam.

3. (Original) The process of Claim 1 wherein substantially all of the byproduct soot is gasified in step (ii).

4. (Original) The process of Claim 1 wherein the non-carbonaceous material comprises alumina.

5. (Original) The process of Claim 1 wherein the non-carbonaceous material contained in the second reactor is in the form of spherical particles.

6. (Original) The process of Claim 1 wherein the non-carbonaceous material contained in the second reactor is in the form of rings.

7. (Original) The process of Claim 1 wherein the non-carbonaceous material contained in the second reactor has a catalytic functionality to facilitate the gasification of the soot.

8. (Original) The process of Claim 1 wherein first and second reactors are operated in a temperature range from 2100F to 2800F.

9. (Original) The process of Claim 1 wherein a fluid is added to the syngas and byproducts produced by the first reactor prior to introducing the syngas and byproducts into the second reactor.

10. (Previously Presented) In an apparatus for the exothermic generation of syngas by the partial oxidation of a hydrocarbon-containing fuel comprising:

(i) a first reactor for reacting the hydrocarbon-containing fuel with an oxygen containing gas to produce the syngas and byproducts comprising CO_2, H_2O, and soot; and

(ii) a second reactor for receiving the syngas and byproducts, wherein the improvement comprises a non-carbonaceous material, contained in said second reactor, that traps the soot for a sufficient time such that the majority of the byproduct soot is gasified via reaction with the byproduct CO_2 and/or H_2O to produce a syngas stream that is depleted in the soot.

11. (Original) The apparatus of Claim 10 which further comprises:

(iii) a heat exchange reformer for recovering a portion of the heat from the soot depleted syngas stream and using at least a portion of the recoverd heat to facilitate the additional production of syngas via the (endothermic) catalytic reforming of natural gas and steam.

12. (Previously Presented) The apparatus of Claim 10 wherein the apparatus is configured to gasify substantially all of the byproduct soot in the second reactor.

13. (Original) The apparatus of Claim 10 wherein the non-carbonaceous material comprises alumina.

14. (Original) The apparatus of Claim 10 wherein the non-carbonaceous material contained in the second reactor is in the form of spherical particles.

15. (Original) The apparatus of Claim 10 wherein the non-carbonaceous material contained in the second reactor is in the form of rings.

16. (Original) The apparatus of Claim 10 wherein the non-carbonaceous material contained in the second reactor has a catalytic functionality to facilitate the gasification of the soot.

17. (Previously Presented) The apparatus of Claim 10 wherein said first and second reactors are configured to operate in a temperature range from 2100F to 2800F.

18. (Original) The apparatus of Claim 10 further comprising a means to add a fluid to the syngas and byproducts produced by the first reactor prior to the second reactor receiving the syngas and byproducts.

19. (Previously Presented) An apparatus for the exothermic generation of syngas by the partial oxidation of a hydrocarbon-containing fuel according to the process of Claim 1, said apparatus comprising:

(i) a first reactor for reacting the hydrocarbon-containing fuel with an oxygen containing gas to produce the syngas and byproducts comprising CO_2, H_2O, and soot; and

(ii) a second reactor for receiving the syngas and byproducts containing a non-carbonaceous material that traps the soot for a sufficient time such that the majority of the byproduct soot is gasified via reaction with the byproduct CO_2 and/or H_2O to produce a syngas stream that is depleted in the soot.

20. (Previously Presented) The apparatus of Claim 19 which further comprises:

(iii) a heat exchange reformer for recovering a portion of the heat from the soot depleted syngas stream and using at least a portion of the recovered heat to facilitate the additional production of syngas via the (endothermic) catalytic reforming of natural gas and steam.

21. (Previously Presented) The apparatus of Claim 19 wherein the apparatus is configured to gasify substantially all of the byproduct soot in the second reactor.

22. (Previously Presented) The apparatus of Claim 19 wherein the non-carbonaceous material comprises
alumina.

23. (Previously Presented) The apparatus of Claim 19 wherein the non-carbonaceous material contained in the second reactor is in the form of spherical particles.

24. (Previously Presented) The apparatus of Claim 19 wherein the non-carbonaceous material contained in the second reactor is in the form of rings.

25. (Previously Presented) The apparatus of Claim 19 wherein the non-carbonaceous material contained in the second reactor has a catalytic functionality to facilitate the gasification of the soot.

26. (Previously Presented) The apparatus of Claim 19 wherein first and second reactors are configured to operate in a temperature range from 2100F to 2800F.

27. (Previously Presented) The apparatus of Claim 19 further comprising a means to add a fluid to the syngas and byproducts produced by the first reactor prior to the second reactor receiving the syngas and byproducts.

28. (Previously Presented) A method of removing entrained soot produced by the partial oxidation of a hydrocarbon-containing fuel, said method comprising:

(i) reacting hydrocarbon-containing fuel with oxygen containing gas in a first reactor to produce syngas and related by-products, said byproducts including CO_2, H_2O, and soot; and

(ii) in a second reactor, contacting said syngas and said byproducts with a non-carbonaceous material that traps the soot for a sufficient time such that the majority of the byproduct soot is gasified via reaction with the byproduct CO_2 and/or H_2O to produce a syngas streams that is depleted of the soot.

29. (Previously Presented) The method of Claim 28 which further comprises:

(iii) recovering a portion of the heat from the soot depleted syngas stream and using at least a portion of the recovered heat to facilitate the additional production of syngas via the (endothermic) catalytic reforming of natural gas and steam.

30. (Previously Presented) The method of Claim 28 wherein substantially all of the byproduct soot is gasified in step (ii).

31. (Previously Presented) The method of Claim 28 wherein the non-carbonaceous material comprises
alumina.

32. (Previously Presented) The method of Claim 28 wherein the non-carbonaceous material contained in the second reactor is in the form of spherical particles.

33. (Previously Presented) The method of Claim 28 wherein the non-carbonaceous material contained in the second reactor is in the form of rings.

34. (Previously Presented) The method of Claim 28 wherein the non-carbonaceous material contained in the second reactor has a catalytic functionality to facilitate the gasification of the soot.

35. (Previously Presented) The method of Claim 28 wherein first and second reactors are operated in a temperature range from 2100F to 2800F.

36. (Previously Presented) The method of Claim 28 wherein a fluid is added to the syngas and byproducts produced by the first reactor prior to introducing the syngas and byproducts into the second reactor.